

## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the above-identified application:

1. (canceled).
2. (currently amended): The high-voltage power supply of claim [[1]] 32, further comprising:
  - a control module for controlling said power scaling section and said push-pull converter.
3. (original): The high-voltage power supply according to claim 2, wherein
  - said power scaling section includes a switching element, a duty cycle of which controls the amplitude of said controllable DC voltage, and
  - said control module outputs a gate switching signal to said switching element of said power scaling section as a function of a desired output voltage of the high-voltage power supply.
4. (original): The high-voltage power supply according to claim 3, wherein said control module receives a feedback signal based on the output of said power scaling section to adjust said gate switching signal.
5. (original): The high-voltage power supply according to claim 2, wherein
  - said push-pull converter includes a plurality of switching elements and a transformer for generating said high-frequency wave, and
  - said control module outputs gate switching signals to the switching elements of said push-pull converter to control the frequency of said high-frequency wave.
6. (original): The high-voltage power supply according to claim 5, wherein said switching elements are MOSFET switching elements.

7. (currently amended): The high-voltage power supply according to claim [[1]] 32, wherein said high-frequency wave is a square wave.
8. (currently amended): The high-voltage power supply according to claim [[1]] 32, wherein the frequency of said high-frequency wave is approximately 100 kHz.
9. (currently amended): The high-voltage power supply according to claim [[1]] 32, wherein said controllable DC voltage is in the range of approximately 0-to28 V.
10. (currently amended): The high-voltage power supply according to claim [[1]] 32, wherein said power supply generates an output voltage of in the range of approximately 0-to-30 kV, DC.
11. (currently amended): The high-voltage power supply according to claim [[1]] 32, wherein said high-frequency wave has an amplitude of approximately 0-to-1 kV.
12. (original): The high-voltage power supply according to claim 2, wherein said control module is an analog controller.
13. (canceled).
14. (currently amended): The high-voltage power supply according to claim [[13]] 32, wherein said insulation system is a multi-layer system of  $n$  layers of insulation and  $m$  conducting strips positioned between successive insulating layers.
15. (currently amended): The high-voltage power supply according to claim [[13]] 32, wherein said insulation system is a field-controlled multi-layer insulation system.
- 16-28 (canceled).

29. (currently amended): The high-voltage power supply according to claim [[1]] 32, wherein the frequency of said high-frequency wave is greater than approximately 20 kHz.

30-31 (canceled).

32. (currently amended): A high-voltage power supply, comprising:

- a power scaling section receiving an input voltage signal and converting said input voltage signal to a controllable DC voltage;

- a push-pull converter for converting said controllable DC voltage to a high-frequency wave; and

- a voltage multiplier receiving said high-frequency wave generated by said push-pull converter and performing successive voltage doubling operations to generate a high-voltage DC output, the generated high-voltage DC output being varied as said controllable DC voltage varies,

- wherein:

- said voltage multiplier includes a plurality of voltage doubler stages on a circuit board,

- said high-voltage power supply further comprises an insulation system associated with said circuit board, and

- said plurality of voltage doubler stages are divided among multiple circuit boards, separate from said power scaling section and said push-pull converter.

33. (new): A high-voltage power supply, comprising:

- a power scaling section receiving an input voltage signal and converting said input voltage signal to a controllable DC voltage;

- a push-pull converter for converting said controllable DC voltage to a high-frequency wave; and

- a voltage multiplier receiving said high-frequency wave generated by said push-pull converter and performing successive voltage doubling operations to generate a high-voltage DC output, the generated high-voltage DC output being varied as said controllable DC voltage varies,

wherein:

said voltage multiplier includes a plurality of voltage doubler stages on a circuit board,

said high-voltage power supply further comprises an insulation system associated with said circuit board, and

said plurality of voltage doubler stages include capacitors arranged in a zig-zag pattern.

34. (new): A high-voltage power supply, comprising:

a power scaling section receiving an input voltage signal and converting said input voltage signal to a controllable DC voltage;

a push-pull converter for converting said controllable DC voltage to a high-frequency wave; and

a voltage multiplier receiving said high-frequency wave generated by said push-pull converter and performing successive voltage doubling operations to generate a high-voltage DC output, the generated high-voltage DC output being varied as said controllable DC voltage varies,

wherein:

said voltage multiplier includes a plurality of voltage doubler stages on a circuit board, and

said plurality of voltage doubler stages are divided among multiple circuit boards, separate from said power scaling section and said push-pull converter.

35. (new): A high-voltage power supply, comprising:

a power scaling section receiving an input voltage signal and converting said input voltage signal to a controllable DC voltage;

a push-pull converter for converting said controllable DC voltage to a high-frequency wave; and

a voltage multiplier receiving said high-frequency wave generated by said push-pull converter and performing successive voltage doubling operations to generate a high-

voltage DC output, the generated high-voltage DC output being varied as said controllable DC voltage varies,

wherein:

said voltage multiplier includes a plurality of voltage doubler stages on a circuit board, and

said plurality of voltage doubler stages include capacitors arranged in a zig-zag pattern.